

## **IMPACT OF RITUCHARYA ON BRONCHIAL ASTHMA WITH SPECIAL REFERENCE TO PEAK EXPIRATORY FLOW RATE**

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### **ABSTRACT**

Ritucharya is an important endowment of Ayurveda to balance the rhythmic seasonal variations of Dosha, Agni and other physiological functions of body. A man who knows the suitable Ahara and Vihara for six different seasons and practices accordingly, his strength and luster enhance and he never suffers from seasonal diseases. In this era of science and technology, the lifestyle change in the form of non-observance of Ritucharya is one of the major risk factors responsible for increasing incidence of various non-communicable diseases. Bronchial asthma is a life threatening disease of airways, creates a substantial burden on individuals and families as it is more often under-diagnosed and under-treated. The efforts by individuals and their health care providers in terms of awareness about Ritucharya could prevent and control Bronchial Asthma. This randomized study was conducted to evaluate the effect of observance of Ritucharya on different parameters of Bronchial Asthma (Tamaka Shvasa) patients. Peak Expiratory Flow Rate (PEFR) is significant one of them. Out of total 140 patients, cases of group A were administered with modern standard drug therapy and group B cases were advised to follow particular Ritucharya in different seasons along with standard drug therapy. Changes in observations were recorded at three follow-ups. There was statistically significant increase in PEFR values of group B cases as compared to cases of group A. It shows linear effect of Ritucharya on improvement of lung functions and Bronchial Asthma.

**KEYWORDS:** Ahara, PEFR, Ritucharya, Tamaka Shvasa, Vihara

### **INTRODUCTION**

Bronchial Asthma is a chronic inflammatory disorder with reversible broncho constriction due to increased responsiveness of tracheobronchial tree to various stimuli. It is characterized by episodes of wheezing, chest tightness, dyspnoea and coughing, which may be relieved spontaneously or as a result of therapy. Asthma is multi-factorial in origin arising from the interaction of genetic, socioeconomic and environmental factors. Its higher prevalence in developed than in developing nations, and in affluent compared with poor populations in developing nations, is likely to reflect lifestyle differences, such as exposure to allergens, access to healthcare, etc<sup>1</sup>. According to "American Lung Association" the Asthma triggers related to food and weather are the common allergic foods like peanuts and shellfish, and cold, damp, windy, stormy weather, and sudden or extreme temperature changes, high humidity and smog<sup>2</sup>. According to "Australasian

Society of Clinical Immunology and Allergy (ASCIA)'' the food containing Sulfites may cause breathing difficulty within minutes after eating. Symptoms of Sulfites sensitivity include wheezing, chest tightness, cough, diarrhoea, nausea, vomiting, abdominal pain, dizziness, difficulty in swallowing, flushing, skin rashes, hives, or anaphylaxis<sup>3</sup>.

Bronchial Asthma closely resembles with Tamaka Shvasa in Ayurveda, considered as a disease caused due to vitiation of Kapha and Vata doshas. The abnormal Kapha obstructs the pathway of Pranavayu which then get vitiated and produces Wheezing (Ghurghuraka), Dyspnoea (Shvasa), Cough (Kasa), Faintness (Pramoha), disturbed Sleep, etc. Patient feels excessive restlessness and gets relief in sitting posture, after spitting of sputum, and by hot things. Its paroxysmal attacks get aggravated in cloudy and rainy season, winters, exposure to cold, easterly wind and due to Kapha aggravating diet and regimen<sup>4</sup>. Any diet or behavior which is ushna and vatanulomaka in nature, and that alleviates Vata and Kapha is useful in Tamaka Shvasa<sup>5</sup>, like ushna food and behaviour, Sitting posture, Vamana and Virechana karma, Snehana and Svedana, Medicated ghee, Honey etc.

Various evidences have revealed that asthma symptoms are sensitive to seasonal variation, climatic changes, airborne allergens and psychological factors. Rahul Jaiswal et al. (2011)<sup>6</sup>, in their study found that major risk factors for Bronchial Asthma are the exposure to cold (like direct cold air, water cooler, fan, A.C.), rain and cloudy sky; exposure to dust (Raja); exposure to smoke (Dhooma); fog; living in humid environment; sedentary lifestyle; day time sleeping; intake of cold items; curd; buffalo's milk and its products; rice at night; and fruits like banana, guava and fruit juices at night.

### **Ritucharya**

The Ayurvedic concept of prevention and cure of diseases is mainly based on Tridosha theory. Ritusatmya is one of the important factors responsible for balance of dosha. Ritusatmya or Seasonal homologation has been described under the heading of Ritucharya (Seasonal Regimen), which deals with the variation in Ahara (diet) and Vihara (behaviour) to balance rhythmic seasonal variations of Dosha, Bala and Agni etc. through the concept of Samanya and Vishesha. Observance of Ritucharya brings about strength, complexion, happiness and longevity without disturbing the equilibrium of Dhatu and Dosha of the body and the individual never suffers from diseases.

An individual taking various types of diet leads to promotion of strength and lusture, only when he knows the wholesomeness according to different seasons dependent on behaviour and diet<sup>7</sup>. Other scholars said that if one follows the regimen according to different seasons, he never suffers from diseases due to the aggravated dosha under the seasonal impact<sup>8,9</sup>.

### **Peak Expiratory Flow Rate (PEFR)**

Based on PEFR values the Asthma severity has been divided into four classes as follows<sup>10</sup> –

- **Mild Intermittent** - PEF variability < 20%
- **Mild Persistent** - PEF variability < 20 - 30%
- **Moderate Persistent** - PEF variability >30%
- **Severe Persistent** - PEF variability >30%

The Peak Expiratory Flow Rate (PEFR) is the maximal rate that a person can exhale during a short maximal expiratory effort after a full inspiration. It is easy to measure manually using a standard Wright Peak Flow Meter. Its normal expected value depends on a patient's sex, age and height. It is classically reduced in obstructive lung disorders such as asthma<sup>11</sup>. From changes in recorded values, patients and doctors may determine lung functionality, severity of asthma symptoms, and treatment options. An easy to remember approximation of Normal values related to the patient's height is:  $PEFR (L/min) = [Height (cm) - 80] \times 5$ .

## OBJECTIVE OF STUDY

To evaluate the effect of Ritucharya (Seasonal Regimen) on Peak Expiratory Flow Rate in patients of Bronchial Asthma (Tamaka Shvasa)

## MATERIALS AND METHODS

A clinical study was conducted in the OPD of T.B. and Respiratory Diseases, Sir Sundar Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, from July 2009 to July 2012. Total 140 well diagnosed patients of Bronchial Asthma were randomly selected irrespective of their age, sex, occupation, socio-economic status, prakriti, and on the basis of following criteria:

### Inclusion Criteria

- Age 16 - 60 yrs
- Cases of Bronchial Asthma (Tamaka Shvasa) fulfilling the diagnostic criteria of modern and Ayurvedic medicine

### Exclusion Criteria

- Age <16 yrs and >60 yrs
- Patients of Pratamaka and Santamaka Shvasa
- Patients of Status Asthmaticus, Chronic Obstructive Pulmonary Disease, Bronchiectasis, Pneumothorax, Eosinophilia, Pulmonary Oedema, Cor-pulmonale, Pulmonary Tuberculosis or any other chronic lung disease
- Patients of Hypertension, Ischemic Heart Disease, Cardiac Arrhythmia, Valvular Heart Disease, Patients of Fever, Migraine, Diabetes Mellitus or any other chronic disease

### Study Design

All the selected patients of Bronchial Asthma were randomly allocated into two groups:

Group A (n=70): Control group (Advised to take Standard drug therapy)

Group B (n=70): Trial group (Advised to follow particular Ritucharya along with Standard drug therapy)

Patients of group A were advised to take Standard drug therapy including Budamate 400 inhaler, two puffs twice a day (Budesonide 400 microgram + Formoterol 6 microgram per puff) along with Tab. Deriphyllin Retard (150 mg), twice in a day, for initial one month; followed by Budamate inhaler only, during rest period of study. Patients of group B were advised to follow the particular regimen during six seasons along with Standard drug therapy as advised to group A cases. Changes in subjective and objective parameters were observed at three follow-ups at an interval of one, two and two months, for a total period of five months. Out of 140 registered cases, 8 patients of group A and 10 patients of group B dropped in the middle of study period.

### Assessment Criteria

All the registered patients were subjected to detailed demographic profile and clinical profile. After this they were subjected to detailed history about the dietary habits and lifestyle predominantly followed during six different seasons of a year. Clinical assessment of symptoms and severity was done on the basis of Subjective and Objective criteria at the time of registration and subsequent 3 follow-ups. PEFr (Peak Expiratory Flow Rate) is the fastest rate at which air can move through the airways during inflated lungs, it is expressed in liters/minute. It was measured with manual Peak flow meter. SPSS Software version 16.0 was used to apply the statistical methods to analyze the data and finding of results.

### OBSERVATIONS AND RESULTS

In this study group of 140 patients of Tamaka Shvasa, maximum cases (69.3%) were adults, 57.1% were males, 92.9% were Hindu, 74.3% were educated, 70.0% belonged to urban community, and 60.7% were of middle socioeconomic group. Maximum registered cases 84 (60.0%) had negative family history of the disease, and 98 (70.0%) were suffering from Bronchial Asthma for less than 5 years<sup>12</sup>. The clinical observations based on subjective and objective parameters were statistically analyzed and summarized. Significant improvement in clinical features and PEFr was observed at each follow-up. In patients of group B, intergroup comparison using Chi-square test showed significant rate of improvement in many symptoms like Dyspnoea, Wheezing, Cough, Rhinorrhoea, Frequency of attack and Duration of attack. In case of Expectoration, Orthopnoea, Soreness of Throat, Heaviness of Head, and Chest pain statistically not significant difference was observed between the two groups, however clinically more significant results were obtained in patients of group B as compared to group A patients.

**Table 1: Showing the Effect of Ritucharya on Peak Expiratory Flow Rate**

Group	PEFR Score Mean $\pm$ SD				Within the Group Comparison (Paired t Test)		
	BT	FU <sub>1</sub>	FU <sub>2</sub>	FU <sub>3</sub>	BT-FU <sub>1</sub>	BT-FU <sub>2</sub>	BT-FU <sub>3</sub>
Group-A	258.14 $\pm$ 109.32	289.71 $\pm$ 108.16	301.85 $\pm$ 108.71	300.97 $\pm$ 101.09	30.59 $\pm$ 13.15 t=19.19 p<0.001	41.69 $\pm$ 15.06 t=22.32 p<0.001	42.90 $\pm$ 19.02 t=17.76 p<0.001
Group-B	286.71 $\pm$ 112.66	330.60 $\pm$ 109.68	335.00 $\pm$ 109.01	344.50 $\pm$ 112.53	45.07 $\pm$ 17.27 t=21.37 p<0.001	49.06 $\pm$ 20.06 t=19.57 p<0.001	55.33 $\pm$ 22.43 t=19.11 p<0.001
Between the Groups Comparison (Unpaired t Test)	t=1.52 p>0.05	t=2.18 p<0.05	t=1.73 p>0.05	t=2.25 p<0.05			

In group A the initial mean  $\pm$  SD of Peak Expiratory Flow Rate was 258.14  $\pm$  109.32, which was increased to 300.97  $\pm$  101.09 after complete follow-up. This result was statistically highly significant (t = 17.76, p<0.001). In group B the mean score was increased from 286.71  $\pm$  112.66 to 344.50  $\pm$  112.53 in third follow-up, showing statistically highly significant result (t = 19.11, p<0.001). During inter-groups comparison by Unpaired t test it was observed that at second follow-up results were statistically not significant (p>0.05) but at first and third follow-ups significant results (p<0.05) were obtained.

These findings depict the additive effect of the observance of Ritucharya along with standard drug therapy for improvement of lung functions and better management of Bronchial Asthma.

## DISCUSSIONS

In this clinical study out of 140 patients of Tamaka Shvasa maximum number of patients attended the hospital first time in winter seasons (Hemanta and Shishira), Vasanta and Varsha, and in majority of cases these were the predominant seasons of Asthma attack. On the basis of history about ahara and vihara observed during different ritus it was found that maximum patients were aware about six seasons and regimen of different seasons but about half of the cases were observing Ritucharya occasionally and less number of cases were found to adhere with Ritucharya regularly. 59.3% cases were bathing with cold water in winters however only 11.4% cases were adhered with the habit of daily head bath. Maximum number of cases preferred shita, guru, madhura and amla rasa predominant ahara like ice-cream, cold drink, fruit juices, cold water, sweets, curd, rice, pickle, tomato ketchup, salad with lemon, etc. in all seasons. The above food items and daily habits should be contraindicated, as they are Kapha and Vata vitiating, which in turn precipitates the attack of Asthma. Foods like ice-cream, cold drink, fruit juices, pickle, tomato ketchup, etc contain Sulfites so these foods should be avoided to prevent breathing difficulties.

Significant improvement was observed in clinical symptoms of both the groups A and B at each follow-up, like Dyspnoea, Wheezing, Cough, Rhinorrhoea, Frequency of attack and Duration of attack. In case of Expectoration, Orthopnoea, Soreness of Throat, Heaviness of Head, and Chest pain. The mean values of PEFr were significantly increased in both groups A and B at each follow-up, showing efficiency of both interventions. Intra group comparison using Paired t test showed highly significant t-values at each follow-up. During inter-groups comparison of PEFr values it can be concluded that although at second follow-up results were statistically not significant but at first and third follow-ups comparatively more significant results were obtained in group B as compared to group A.

The findings of this study support the statement of acharya Lolimbaraja that, if pathya (wholesome diet and regimen) is being followed in a planned way, then there is no need for separate medical treatment as the patient will be cured by pathya only or medicines would be more effective. On the other hand if apathya (unwholesome) is being permitted, there is no use of medication, as the medicines would not be effective alone without following pathya<sup>13</sup>.

## CONCLUSIONS

Education of Ritucharya offers individuals and groups opportunities to increase their knowledge, awareness, skill & support to adopt regular practices of seasonal regimen. Observance of Ritucharya is a non-pharmacological approach with definite efficacy, safety and cost-effectiveness for prevention and control of diseases. This study provides the scientific data to validate the direct impact of regular observance of Ritucharya on clinical features and lung functions of Asthma patients. Values of PEFr help in determination of lung function and severity of asthma symptoms. Its values increased significantly in the patient of group B who followed the strict seasonal regimen along with modern medicine. These finding proves that prevention of Bronchial Asthma can be done by 'Patient-Care partnership' and 'Self-management' through proper awareness and observance of Ritucharya. The guidelines and results of this study should be propagated in the community, with implementation in future health strategies worldwide.

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